What is Claimed is:

1. A magneto-optical recording medium comprising:

a recording layer having a plurality of columns extending in a lamination direction; and

a first under layer which is placed below said recording layer and which functions as a nucleus for said columns.

2. The magneto-optical recording medium according to claim 1, further comprising a second under layer which is placed between said recording layer and said first under layer and through which the width of said columns is controlled.

3. The magneto-optical recording medium according to claim 1, wherein said first under layer is a magnetic thin film of an amorphous structure.

4. The magneto-optical recording medium according to claim 2, wherein said second under layer is a magnetic thin film of an amorphous structure.

5. The magneto-optical recording medium according to claim 1, wherein said first under layer is formed as a portion of said recording layer.

6. The magneto-optical recording medium according to claim 2, wherein said second under layer is formed as a portion of said recording layer.

7. The magneto-optical recording medium according to claim 1, wherein said first under layer has on the side of said recording layer a portion in which the density is changed.

8. The magneto-optical recording medium according to claim 1, wherein the width of a structural unit of said first under layer is substantially 2 nm or less.

9. The magneto-optical recording medium according to claim 1, wherein said first under layer takes in substantially 0.5 mol% or more inert gas.

10. The magneto-optical recording medium according to claim 1, wherein the film thickness of said first under layer is substantially within the range from 5 to 50 nm.

11. The magneto-optical recording medium according to claim 2, wherein said second under layer has a plurality of columns extending in the lamination direction.

12. The magneto-optical recording medium according to claim 11, wherein the width of the columns of said second under layer is substantially within the range from 2 to 40 nm.

13. The magneto-optical recording medium according to claim 2, wherein the film thickness of said second under layer is substantially within the range from 5 to 50 nm.

14. The magneto-optical recording medium according to claim 3, wherein said amorphous structure is an amorphous structure which is random on the order of atoms.

15. The magneto-optical recording medium according to claim 1, wherein the width of the columns of said recording layer is larger than the width of the structural unit of said first under layer.

16. The magneto-optical recording medium according to claim 1, wherein said recording layer is more porous than said first under layer.

17. The magneto-optical recording medium according to claim 1, wherein said recording layer is magnetically coupled to said first under layer.

18. The magneto-optical recording medium according to claim 2, wherein said recording layer is magnetically coupled to said second under layer.

19. The magneto-optical recording medium according to claim 1, wherein the width of a structural unit of columns in said recording layer is substantially within the range from 2 to 40 nm.

20. The magneto-optical recording medium according to claim 1, wherein the density of said recording layer is substantially within the range from 2.0 to 5.0 g/cm^3.

21. The magneto-optical recording medium according to claim 1, wherein the film thickness of said recording layer is substantially within the range from 40 to 300 nm.

22. The magneto-optical recording medium according to claim 2, wherein said recording layer is formed of a thin film of an alloy of a predetermined rare-earth metal and a predetermined transition metal;

said first under layer is formed of a thin film of an alloy of a predetermined rare-earth metal and a predetermined transition metal; and

said second under layer is formed of a thin film of an alloy of a predetermined rare-earth metal and a predetermined transition metal.

23. The magneto-optical recording medium according to claim 22, wherein the rare-earth metal is at least one of Tb, Gd, Dy and Ho.

24. The magneto-optical recording medium according to claim 1, wherein said recording layer has a multilayer structure.

25. The magneto-optical recording medium according to claim 1, wherein said first under layer is a non-magnetic thin film.

26. The magneto-optical recording medium according to claim 2, wherein said second under layer is a non-magnetic thin film.

27. The magneto-optical recording medium according to claim 25 or 26, wherein said non-magnetic thin film contains at least one of Al, Ti, Ta, Cr, Cu, Ag, Au, Pt, Nb, Si and Ru.

28. The magneto-optical recording medium according to claim 1, wherein the surface roughness Ra of said first under layer is substantially within the range from 0. 1 to 1.5 nm.

29. The magneto-optical recording medium according to claim 2, wherein the surface roughness Ra of said second under layer is substantially within the range from 0. 2 to 2 nm.

30. The magneto-optical recording medium according to claim 9, wherein said inert gas contains at least one of Ar, Ne, Kr and Xe.

31. The magneto-optical recording medium according to claim 1, wherein said recording layer takes in substantially 0.5 mol% or more inert gas.

32. The magneto-optical recording medium according to claim 31, wherein said inert gas contains at least one of Ar, Ne, Kr and Xe.

33. A method of manufacturing a magneto-optical recording medium including a recording layer having a plurality of columns extending in a lamination direction, and a first under layer which is placed below the recording layer and which functions as a nucleus for the columns, said method comprising:

a first under layer forming step of forming the first under layer; and

a recording layer forming step of forming the recording layer on the first under layer formed in said first under layer forming step.

34. The method of manufacturing a magneto-optical recording medium according to claim 33, said magneto-optical recording medium further having a second under layer which is placed between the recording layer and the first under layer and through which the width of the columns is controlled, said method further comprising a second under layer forming step

of forming the second under layer on the first under layer formed, the recording layer being formed on the second under layer formed.

35. The method of manufacturing a magneto-optical recording medium according to claim 34, wherein the pressure at the time of film forming in said first under layer forming step is lower than the pressure at the time of film forming in said second under layer forming step.

36. The method according to claim 35, wherein the pressure at the time of film forming is substantially equal to or higher than 1.5 Pa and lower than 6 Pa.

37. The method according to claim 34, wherein the pressure at the time of film forming in said second under layer forming step is lower than the pressure at the time of film forming in said recording layer forming step.

38. The method according to claim 34, wherein the deposition rate at the time of film forming in said first under layer forming step is lower than the deposition rate at the time of film forming in said second under layer forming step.

39. The method according to claim 34, wherein the deposition rate at the time of film forming in said second under layer forming step is lower than the deposition rate at the time of film forming in said recording layer forming step.

40. The method according to claim 33, wherein the deposition rate at the time of film forming in said first under layer

forming step is substantially within the range from 0.2 to 5 nm/sec.

41. The method according to claim 34, wherein the deposition rate at the time of film forming in said second under layer forming step is substantially within the range from 0.2 to 5 nm/sec.

42. The method according to claim 33, wherein the deposition rate at the time of film forming in said recording layer forming step is substantially within the range from 2 to 20 nm/sec.

43. A method of recording on a magneto-optical recording medium including a recording layer having a plurality of columns extending in a lamination direction, and a first under layer which is placed below the recording layer and which functions as a nucleus for the columns, said method comprising a data write step of writing predetermined data to the recording layer.

44. A method of reproduction from a magneto-optical recording medium including a recording layer having a plurality of columns extending in a lamination direction, and a first under layer which is placed below the recording layer and which functions as a nucleus for the columns, said method comprising a data readout step of reading out predetermined data written to the recording layer.